

IN THE CLAIMS:

Claims 1, 5, 7-10, 14, 16, and 18-26 are pending in this application, as follows:

1. (Previously Presented) A composition for removing residues from the microstructure of an object comprising:

carbon dioxide;

an additive for removing the residues comprising a fluoride having a formula $NR_1R_2R_3R_4F$, where each of R_1 , R_2 , R_3 , and R_4 is an alkyl group, and a basic compound including a quaternary ammonium hydroxide; and

a co-solvent for dissolving said additive in said CO_2 at a pressurized fluid condition,

wherein at least said carbon dioxide is in a supercritical state so as to maintain the composition comprising said carbon dioxide, said additive and said co-solvent as a single composition,

wherein weight percents of said carbon dioxide, said additive and said co-solvent are such that the composition comprising said carbon dioxide, said additive and said co-solvent effectively penetrates residues on the microstructure, and

wherein the fluoride is selected from tetramethylammoniumfluoride, tetraethylammonium-fluoride, tetrabutyl-ammoniumfluoride, tetrapropylammoniumfluoride, choline fluoride, and mixtures thereof.

- 2-4. (Canceled).

5. (Previously Presented) A composition for removing residues from the microstructure of an object comprising:

carbon dioxide,

a compound having a hydroxyl group,

a fluoride having a formula $NR_1R_2R_3R_4F$, where each of R_1 , R_2 , R_3 , and R_4 is an alkyl group, and

a basic compound including a quaternary ammonium hydroxide, and

a co-solvent for dissolving said additive in said CO_2 at a pressurized fluid condition,

wherein at least said carbon dioxide is in a supercritical state so as to maintain the composition comprising said carbon dioxide, said additive and said co-solvent as a single composition,

wherein weight percents of said carbon dioxide, said additive and said co-solvent are such that the composition comprising said carbon dioxide, said additive and said co-solvent effectively penetrates residues on the microstructure, and

wherein the fluoride is selected from tetramethylammoniumfluoride, tetraethylammonium-fluoride, tetrabutyl-ammoniumfluoride, tetrapropylammoniumfluoride, choline fluoride, and mixtures thereof.

6. (Canceled).
7. (Previously Presented) The composition of claim 5 wherein the basic compound is selected from a mixture of the quaternary ammonium hydroxide with an alkylamine, an alkanolamine, and a hydroxylamine.
8. (Previously Presented) The composition of claim 5, wherein the co-solvent is selected from dimethylacetamide, propylene glycol, dimethylsulfoxide, deionized water, acetic acid, and mixtures thereof.
9. (Previously Presented) The composition of claim 5, wherein the co-solvent comprises deionized water.
10. (Previously Presented) The composition of claim 5, wherein the co-solvent does not include water.
- 11-13. (Canceled).
14. (Original) The composition of claim 5 wherein the compound is selected from ethanol, methanol, n-propanol, isopropanol, n-butanol, iso-butanol, diethyleneglycolmonomethylether, diethyleneglycolmonoethylether, hexafluoro-isopropanol, and mixtures thereof.

15. (Canceled)

16. (Previously Presented) The composition of claim 19 wherein the additive is dissolved within the co-solvent.

17. (Canceled)

18. (Previously Presented) The composition of claim 19 wherein the residues are at least one selected from photoresist, UV-hardened resist, X-ray hardened resist, ashed resists, carbon-fluorine containing polymer, plasma etch residues, organic process contaminants, and inorganic process contaminants.

19. (Previously Presented) A composition for removing residues from the microstructure of an object comprising:

carbon dioxide wherein the carbon dioxide is in a pressurized or a supercritical fluid state;

an additive comprising a fluoride having a formula $NR_1R_2R_3R_4F$, where each of R_1 , R_2 , R_3 , and R_4 is an alkyl group, and mixtures thereof and a basic compound including a quaternary ammonium hydroxide; and

a co-solvent selected from an alcohol, dimethylacetamide, propylene glycol, dimethylsulfoxide, deionized water, acetic acid, acetone, ethanol, propanol, dimethylformamide, N-methyl-2-pyrrolidone, diethylene glycol methyl ether, and mixtures thereof,

wherein at least said carbon dioxide is in a supercritical state so as to maintain the composition comprising said carbon dioxide, said additive and said co-solvent as a single composition, and

wherein weight percents of said carbon dioxide, said additive and said co-solvent are such that the composition comprising said carbon dioxide, said additive and said co-solvent effectively penetrates residues on the microstructure, and

wherein the fluoride is selected from tetramethylammoniumfluoride, tetraethylammonium-fluoride, tetrabutyl-ammoniumfluoride, tetrapropylammoniumfluoride, choline fluoride, and mixtures thereof.

20. (Previously Presented) A composition for removing residues from the microstructure of an object comprising:

from 0.001 to 8 weight percent of an additive comprising a fluoride having a formula $NR_1R_2R_3R_4F$, where each of R_1 , R_2 , R_3 , and R_4 is an alkyl group, and mixtures thereof and a basic compound including a quaternary ammonium hydroxide;

from 1 to 50 weight percent of a co-solvent selected from an alcohol, dimethylacetamide, propylene glycol, dimethylsulfoxide, deionized water, acetic acid, acetone, ethanol, propanol, dimethylformamide, N-methyl-2-pyrrolidone, diethylene glycol methyl ether, and mixtures thereof; and

carbon dioxide, wherein at least said carbon dioxide is in a supercritical state so as to maintain the composition comprising said carbon dioxide, said additive and said co-solvent as a single composition,

wherein the fluoride is selected from tetramethylammoniumfluoride, tetraethylammonium-fluoride, tetrabutyl-ammoniumfluoride, tetrapropylammoniumfluoride, choline fluoride, and mixtures thereof.

21. (Previously Presented) The composition of claim 20 wherein the additive further comprises methane.

22. (Previously Presented) The composition of claim 20 wherein the additive further comprises a surfactant having a CF_x group.

23. (Previously Presented) A composition for removing residues from the microstructure of an object comprising:

carbon dioxide;

an additive for removing the residues comprising a fluoride having a formula $NR_1R_2R_3R_4F$, where R_1 , R_2 , R_3 , and R_4 are each independently a hydrogen or an alkyl group, and a quaternary ammonium hydroxide; and

a co-solvent for dissolving said additive in said CO_2 at a pressurized fluid condition, wherein at least said carbon dioxide is in a supercritical state so as to maintain the composition comprising said carbon dioxide, said additive and said co-solvent as a single composition,

wherein weight percents of said carbon dioxide, said additive and said co-solvent are such that the composition comprising said carbon dioxide, said additive and said co-solvent effectively penetrates residues on the microstructure, and

wherein the fluoride is selected from tetramethylammoniumfluoride, tetraethylammonium-fluoride, tetrabutyl-ammoniumfluoride, tetrapropylammoniumfluoride, choline fluoride, and mixtures thereof.

24. (Previously Presented) The composition of claim 1, wherein an amount of the additive is from 0.001 to 8 weight percent and an amount of the co-solvent is from 1 to 50 weight percent.
25. (Previously Presented) The composition of claim 5, wherein an amount of the additive is from 0.001 to 8 weight percent and an amount of the co-solvent is from 1 to 50 weight percent.
26. (Previously Presented) The composition of claim 19, wherein an amount of the additive is from 0.001 to 8 weight percent and an amount of the co-solvent is from 1 to 50 weight percent.